

### ABSTRACT OF THE DISCLOSURE

[0096]

A polymer-based component formed from a synthetic thermoplastic or thermoset resin substrate, such as polymethyl methacrylate, which is resistant to warping and distortion from moisture. A composite multi-layer surface-hardening coating is formed on at least the anterior surface of the resin substrate. The component can include a composite multi-layer reflective coating to form a mirror. A protective back-coat layer is deposited on a posterior surface of the mirror. A multi-layer weather-resistant coating may optionally be applied to the anterior surface of the polymer-based mirror in order to increase the weatherability and durability of the mirror. The various layers coating the synthetic resin substrate have their moisture permeabilities selected so that substantially equal amounts of moisture permeate through to both the anterior and posterior side of the synthetic resin substrate. A sol-gel coating can be used to deposit the multi-layers in a single step by providing gradient zones of zirconia/silica while enabling a hydrophobic or a hydrophilic exterior surface.